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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,115	03/06/2002	Pratibha Laxman Gai	CL1729 US NA	7998

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WILMINGTON, DE 19805

EXAMINER

KOSLOW, CAROL M

ART UNIT	PAPER NUMBER
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1755

DATE MAILED: 01/09/2003

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/092,115

Applicant(s)

GAI, PRATIBHA LAXMAN

Examiner

C. Melissa Koslow

Art Unit

1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application:
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 is/are allowed.
- 6) ☒ Claim(s) 4 and 6-17 is/are rejected.
- 7) ☒ Claim(s) 5 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 March 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Art Unit: 1755

The Rokita et al article cited in the Information Disclosure Statement of 6 August 2002 was considered with respect to discussion of this reference on page 2 of the specification.

The drawings are objected to because figures 3a, 4a, 7a and 7b are too dark to be clearly scanned. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

The disclosure is objected to because of the following informalities: Page 6, lines 2-3 teaches the ceramic is stable up to at least 1000°C. Thus the upper limit of this range is unclear since at least 1000°C includes all temperatures above 1000°C and it is very unlikely that the ceramic maintains its structural integrity at all temperatures. Appropriate correction is required.

Claims 4, 6, 7, 10, 11, 14 and 14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention.

Claims 4, 6 and 14 are not supported by the specification. Pages 6 and 7 teach the other dopant besides silica is selected from CaO, K₂O or copper oxide. Thus there is no support for claiming the other dopant is any cation with an ionic ratio of about 1 Å. Claims 7, 10 and 11 are not supported by the specification since the specification is based on the molar amounts of aluminum orthophosphate, silica and calcium oxide, not the molar amounts of Al, Si and Ca, as claimed. Claim 15 is not supported since the specification teaches the dopant is CaO, not that the dopant comprises CaO.

Art Unit: 1755

Claims 7-9 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the method of stabilizing AlPO_4 comprising admixing an acidic solution of AlPO_4 to stoichiometric amounts of silica and calcium nitrate where the pH of the mixed solution is about 2.5 and the mole ratio percentages are greater than 0 to less than about 4 mol% calcium nitrate; greater than 0 to less than about 10 mol% silica and the remained is AlPO_4 , adding NH_4OH to the mixture to raise the pH to about 9, dehydrating the mixture to produce a precipitate and then heating the precipitate at 500°C does not reasonably provide enablement for the method of stabilizing AlPO_4 comprising admixing an acidic solution of AlPO_4 to stoichiometric amounts of silica and a calcium oxide source where the mole ratio percentages are greater than 0 to less than about 4 mol% calcium; greater than 0 to less than about 10 mol% silica and the remained is AlPO_4 , raising the pH, and dehydrating the mixture to produce a precipitate. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims.

The claims recite the method of stabilizing AlPO_4 comprising admixing an acidic solution of AlPO_4 to stoichiometric amounts of silica and a calcium oxide source where the mole ratio percentages are greater than 0 to less than about 4 mol% calcium; greater than 0 to less than about 10 mol% silica and the remained is AlPO_4 , raising the pH, and dehydrating the mixture to produce a precipitate. This encompasses any pH and any calcium source. However, the specification only teaches, on pages 3 and 4 and in the examples, the method of stabilizing AlPO_4 comprising admixing an acidic solution of AlPO_4 to stoichiometric amounts of silica and calcium nitrate where the pH of the mixed solution is about 2.5 and the mole ratio percentages

Art Unit: 1755

are greater than 0 to less than about 4 mol% calcium nitrate; greater than 0 to less than about 10 mol% silica and the remained is AlPO_4 , adding NH_4OH to the mixture to raise the pH to about 9, dehydrating the mixture to produce a precipitate and then heating the precipitate at 500°C . Such a limited disclosure does not support the breadth of the instant claims.

Claims 4, 6, 7, 14 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is incomplete for omitting essential steps, such omission amounting to a gap between the steps. See MPEP § 2172.01. The omitted steps are: the taught heating step. Claim 16 is indefinite since the upper limit of this range is unclear since at least 1000°C includes all temperatures above 1000°C . Claims 4, 6 and 14 are indefinite as to the range of "about 1 Å". The specification teaches calcium has an ionic radius of 1 Å, but this is only for radius having a coordination number 6. At coordination numbers 8 and 12, calcium has an ionic radius of 1.1 and 1.35 Å. At coordination numbers 4 and 6, monovalent copper has a radius of 0.6 or 0.77 Å, at coordination numbers 4 and 6, divalent copper has a radius of 0.57 and 0.73 Å and at coordination number 6, trivalent copper has a radius of 0.54 Å. At coordination numbers 4, 6, 8 and 12, potassium has an ionic radius of 1.37, 1.38, 1.51 and 1.64 Å. Thus it is unclear which coordination number ionic radius should be used to determine if the dopant meets the claimed value and what radii fall within the claimed range.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 1755

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12-14, 16 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 92/00929.

This reference teaches a single phase AlPO_4 composition comprising silica and boron oxide dopants where the composition has the β -cristobalite structure. This means the composition has a cubic structure, a space group F-43m and an a length of about 7.2 Å. Page 6 teaches this composition is stable at temperatures up to 1200°C. Boron has an ionic radius of 0.35 Å, which falls within the scope of the claimed range "about 1 Å". The reference teaches the claimed composition.

Claims 1-3 are allowable over the cited art of record.

Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

There is no teaching of suggestion in the cited art of record of a stabilized AlPO_4 composition comprising greater than 0 to less than about 4 mol% CaO , K_2O or copper oxide; greater than 0 to less than about 10 mol% silica and the remained is AlPO_4 . There is no teaching or suggestion in the cited art of record of an AlPO_4 composition comprising silica and CaO dopants where the composition has a cubic structure, a space group F-43m and an a length of about 7.2 Å at a temperature of less than about 270°C.

Art Unit: 1755


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (703) 308-3817. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell, can be reached at (703) 308-3823.

The fax number for Amendments filed under 37 CFR 1.116 or After Final communications is (703) 872-9311. The fax number for all other official communications is (703) 872-9310.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0661 or (703) 308-0662.

cmk
January 6, 2003


C. Melissa Koslow
Primary Examiner
Tech. Center 1700